



THE CENTRAL REGISTRIES OF OCCUPATIONAL AND MEDICAL EXPOSURE IN THE CZECH REPUBLIC

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Abstract

This paper is intended to provide some insight into the recent situation in the Czech Republic concerning the registration and evaluation of occupational and medical radiation exposures. Since 1993 the creation of the Central (national) Registries of Occupational (CROE) and Medical Exposure (CRME) has been started. One of the main functions of these registries will be to provide statistics to guide policy making on a national basis. Authors pick up their presentation in previous national conference in Jachymov last year and continue with further detailed information on the structure of creating programs and discuss some actual arising problems.

Introduction

The actions leading to the creation of CROE and CRME were opened in 1994 by Radiation Hygiene Centre of National Institute of Public Health under the financial participation of the Ministry of Industry and Trade and Ministry of Health. In accordance with the changes in the structure of radiation protection in our republic this year, registries are now created in new National Institute of Radiation Protection which is supervised by State Office of Nuclear Safety.

Croe - Recent Situation

The basis of the registration and evaluation of OE is the individual monitoring of classified workers. The employer's duty, covered by the Regulation No.5 / 1979 in our country, is to secure individual monitoring of radiation workers and record results of monitoring.

At present there are five dosimetry services, about twenty thousand monitored workers and one thousand registered employers in CZ. Distribution of workers according to four basic occupational groups is given in Tab.1. As it has been already mentioned the creation of central registration system has been started since 1994 and following steps have been already done: the choice of the company for software covering of the system, the start of the co-operation with all our dosimetric services, methodology unification of OE dosimetric evaluation in our country (1).

Tab.1: Numbers of monitored workers (in thousands) for four basic occupational groups in the Czech Republic

Occupational group	Year				
	1 975	1 980	1 985	1 990	1 993
Uran.industry ¹⁾	3,5	10,3	10,3	7,9	3,3
General industry ²⁾	11,2	5,4	6,8	7,8	5,7
Medicine ²⁾	3,7	5,6	7,1	8,2	11,1
NPP ³⁾				1,5	2,6

¹⁾ Dosimetry Service of Uranium Industry

²⁾ National service of Personal Dosimetry, Ltd.

³⁾ Dosimetry Service of NPP Dukovany

The database system is using ORACLE and operating in HP computers. The CROE databases are - personal, utilities (employers), dosimetric services, values of the personal dosimetric quantities, accidents, cumulative five years values.

Databases contain detailed identification of employers including their activity categories (Tab.2) and the dose records for all monitored workers with details of their age, sex, occupational category, type of handling radiation source. The data will be reorganized annually and individual dose assessment will be maintain for the current year and previous five years. Earlier data will be archived. The system uses special identification number for workers (birth number) and employers (random number) and all data are treated as confidential. Recently the registration cards serving for a contact between CROE and dosimetric services and employers are created. The cards will provide for CROE entrance data of all radiation workers in CZ and any changes in their registration.

The contact with the International System on Occupational Exposure was also opened up in 1994 and the created national system of ORE registration is built in the harmony with the recommendations and demands of this international system. This is a reason for instance for such detailed structure of occupational categories in NPP.

Tab.2: Employer*s activity categories in CROE

1.0. Health service	4.2. Chemical
1.1. Hospitals	4.3. Mining
1.2. Other medical facilities	4.4. Building
1.3. Special medical facilities	5.0. Uranium industry
2.0. Education, research	6.0. Defenece
3.0. Energetics	7.0. Agriculture, food
3.1. NPP Dukovany	8.0. Transport
3.2. NPP Temelín	9.0. Specialized facility
3.3. Others	9.1. Customs, Inspectorates, Supervision
4.0. General industry	9.2. Services, Repair work, Tests
4.1. Engeneering	

The start of routine work of CROE is planned for next year. CROE will have a number of functions - to provide the new employer with summarized information of an individual*s dose history, to guarantee a right annual dose calculation for workers with two or more employers, to provide statistics to national regulatory authorities.

Crme - Recent Situation

The survey and evaluation of medical radiation exposure (MRE) exists as a part of all reports of UNSCEAR from 1958. The aim of these world-wide studies is an estimation of world-wide dose, analyse of frequencies and dose distributions and determination of time trends in this area. This information enables us to evaluate the regional differences in the use of sources of ionizing radiation (SIR) in medicine and to determinate topics of interest on this field. Concerning the problems with the collection of data there are several ways used in different countries - organization of national surveys, co-operation with hospitals, universities, health insurance companies (2, 3). Concerning the problem with the evaluation of MRE - one of possibilities is to take account of age and sex differences in risk coefficient and use a new

quantity for evaluation of detriment from MRE (4). Generally it is possible to say that taking account of age and sex of patients, a detriment is significantly decreasing. This estimation depends of course also on demographic structure of individual countries.

We are taking account of all these problems and we would like to avoid them creating the national registration system in our country. In CZ there are recently 350 radiodiagnostic, 52 nuclear medicine and 40 radiotherapy workplaces. There was performed about 9.5 mil radiodiagnostic, 250 ths nuclear medicine and 22 ths radiotherapy procedures (numbers from Institute of Health Information Systems of Ministry of Health of CZ, in 1993). This is big amount of data and it is impossible to sort all of them according to all demanded parameters.

There are three main sources of data :

- the regular annual statistic survey of Ministry of Health which is managed by Institute of Health Information Systems (IHIS), but there is no possibility to sort patients according to their age and sex , IHIS collects only the numbers of procedures and there is also problem with the clear definition of individual examinations,
- the organization of a national survey and use information systems of individual health utilities,
- there is problem with co-operation and organization of this survey,
- the co-operation with health insurance companies,
- there are twenty companies in CZ now, but one of them General Health Insurance Comp. (GHIC) is the biggest one which cover about 80% of our population.

Tab.3: Nuclear medicine, 1994, females and males

females	> 84	75-84	65-74	55-64	45-54	35-44	25-34	15-24	5-14	0-4	total
bone	85	600	1417	1071	960	213	69	138	154	42	4749
renal	16	156	418	363	353	235	132	467	710	216	3066
thyroid	28	93	254	207	313	169	133	67	4	1	1269
liver+gb	8	63	161	106	192	115	49	127	56	21	898
brain	14	64	113	72	105	54	30	55	21	2	530
lung	167	503	598	265	288	90	42	44	18	9	2024
heart	3	14	64	73	163	100	33	66	35	5	556
tomo sci	4	20	120	120	181	60	13	10	0	3	531
other	1	18	43	33	40	36	14	21	13	0	219
total	326	1 531	3 188	2 310	2 595	1 072	515	995	1 011	299	

males	> 84	75-84	65-74	55-64	45-54	35-44	25-34	15-24	5-14	0-4	total
bone	93	526	1124	609	372	145	65	192	182	93	3401
renal	33	143	359	228	283	155	160	616	525	305	2807
thyroid	4	83	92	44	45	36	17	10	4	0	260
liver+gb	11	29	126	121	134	78	58	150	91	13	811
brain	1	41	107	64	67	30	31	58	29	1	429
lung	76	274	509	295	254	147	76	26	20	7	1684
heart	0	15	82	112	170	72	27	98	81	0	657
tomo sci	4	24	148	172	223	88	27	4	0	0	690
other	1	4	30	29	20	11	17	7	8	0	127
total	223	1 064	2 577	1 674	1 568	762	478	1 161	940	419	

Database GHIC obtains birth number of each patient from that it is possible to determine age and sex of patient and GHIC has unified list of all examination - so this is exceptional opportunity to obtain statistically significant data for MRE evaluation in our country. We will obtain only part of birth number of patient, the system will not operate with confidential personal data, it will be anonymous, but before this modification of data the system will identify each patient as individual - it means we will be able to say not only how many procedures were performed but also how many patients were examined. In principle we would like to collect data by both way in co-operation with GHIC and with selected representatives health utilities. The data from IHIS which are collected on the national level we can use for better approximation of collected data to a national level.

GHIC provided us with first data which are related to the region with 1,2 mil inhabitants (app. 10 mil inhabitants live in CZ now) in 1994. Partial data concerning a nuclear medicine are shown in Tab.3. The analyse and creation of methodology for regular collection of data is our main goal for near future.

References

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